



THE STATE
of **ALASKA**
GOVERNOR BILL WALKER

Department of Natural Resources

Division of Oil & Gas

550 W. 7th Avenue Suite 1100
Anchorage, Alaska 99501-3560
Main: 907.269.8800
Fax: 907.269.8939

July 21, 2015

Ms. Suzan Simonds
Permits and Regulatory Manager
SAExploration, Inc.
8240 Sandlewood Place, Suite 102
Anchorage, Alaska 99507

RE: MLUP/CI 15-004, Geophysical Exploration Permit, Lower Cook Inlet 3D Marine Seismic Survey Permit Approval

Dear Ms. Simonds:

The Department of Natural Resources (DNR), Division of Oil and Gas (Division) approves the amended SAExploration (SAE) Lower Cook Inlet 3D Marine Seismic Survey Miscellaneous Land Use Permit (MLUP) application, dated June 23, 2015, to conduct geophysical exploration on State of Alaska waters in the Lower Cook Inlet. The enclosed permit, MLUP/CI 15-004, authorizes SAE to conduct a marine seismic survey on State of Alaska waters within the Lower Cook Inlet from, approximately, east of Kalgin Island and the Outer Continental Shelf (OCS) boundary and south of the Kenai River to just south of Anchor Point subject to the conditions of the permit.

This permit is effective July 21, 2015 to July 15, 2016.

Issuance of a permit under 11 AAC 96 is not a disposal of an interest in land and does not grant a preference right to a lease or other disposal. The permit is revocable for cause for violation of a permit stipulation of this chapter, and is revocable at will if the DNR determines that the revocation is in the state's interest. Each permit issued is subject to any stipulations the DNR determines necessary to assure compliance with this chapter, to minimize conflicts with other uses, to minimize environmental impacts, or otherwise to be in the interests of the state. Public notice of any miscellaneous land use application is discretionary under 11 AAC 96.030(c). The Director of the Division of Oil and Gas (Director) has the right at any time to amend or modify any provisions of this permit, or revoke this permit.

Project Description: Proposed Activity, Associated Structures, Type of Equipment

SAE plans to acquire three dimensional (3D) geophysical data in an approximate 547.8 square mile area in the Lower Cook Inlet starting in July of 2015. SAE will only conduct water based data acquisition operations and will use autonomous nodal seismic recording equipment and air guns as the source.

Marine operations will be based on a recording patch approach which is typically groups of 6 receiver lines and 32 source lines. The outside dimensions of a patch are approximately 7.5 mi x 10 mi (12km x 16 km), and each patch takes approximately 3-5 days to deploy, shoot, and record. The receiver lines are spaced 1,650 ft. (503 m) apart and are oriented parallel to the shoreline. The source lines are oriented perpendicular to the shoreline. Where possible, source lines may extend approximately 3 mi (5km) beyond the outside receiver lines and approximately 2.5 mi (4 km) beyond the ends of the receiver lines. During the recording of a patch, nodes from the previous patch will be retrieved, charged, and data downloaded from the nodes prior to redeployment to the next patch. As patches are recorded, receiver lines are moved side-to-side or end-to-end to the next patch location so that receiver lines have continuous coverage of the recording area. Adjacent patches may or may not be recorded, depending on scheduling priorities. The energy sources for offshore recording consist of 2 x 880-cubic inch (cui) tri-cluster arrays for a total of 1,760-cui. Two source vessels will be equipped with 1,760-cui air guns. Source activities only occur during low and high slack tides or when vessels can operate safely to acquire quality data. Typically, source activities will occur for two to three hours at each slack tide.

The marine nodes are cable-less but will be tethered together for ease of retrieval. The nodes and rope tether will lie on the seabed floor and will have no effect on marine traffic. A buoy release will be deployed when the line is ready for retrieval. Primary positioning for vessels will be with a Global Positioning System (GPS) with antenna attached to the gun array.

Scope of Decision:

This decision is reviewing the following activities for Division approval:

The activities supporting seismic data acquisition as defined in the application in State of Alaska waters from the Mean High Water (MHW) seaward, within the project area on Figure 1 (Appendix C), have been reviewed under the authority of this approval.

This decision is not reviewing the following activities for Division approval:

This project does not include land-based work above the MHW. This decision does not approve any activities beyond the OCS boundary on Figure 1 (Appendix C).

Land and Water Status:

The proposed Lower Cook Inlet 3D Marine Seismic Survey program is located on state waters within the Lower Cook Inlet Figure 1 (Appendix C). SAE plans to acquire approximately 547.8 square miles of data on state waters within the below townships. As indicated on Figure 1 in Appendix C all or part of the below townships are within the project area in state waters:

Meridian: Seward

Township: 001N	Range(s): 012W
	013W
	014W
	015W

Township: 002N Range(s): 012W
 013W
 014W
 015W
 016W

Township: 003N Range(s): 012W
 013W
 014W
 015W

Township: 004N Range(s): 012N
 013W
 014W

Township: 001S Range(s): 013W
 014W
 015W

Township: 002S Range(s): 014W
 015W

Township: 003S Range(s): 014W
 015W

Township: 004S Range(s): 015W
 016W

Township: 005S Range(s): 015W
 016W

Agency Review:

The Division provided an Agency review and comment opportunity for the activities considered for authorization under this decision. The following government entities were notified on July 1, 2015 for comment on the application: United States Coast Guard (USCG), United States Army Corps of Engineers (USACE), Kenai Peninsula Borough (KPB), National Oceanic and Atmospheric Administration (NOAA), Alaska Department of Fish and Game (ADFG), Alaska Department of Environmental Conservation (ADEC), Alaska Oil and Gas Conservation Commission (AOGCC), and DNR: Division of Mining Land and Water (DMLW), Office of Project Management and Permitting (OPMP), Office of History and Archaeology (OHA), and Division of Oil and Gas. The comment deadline was 4:30 pm Alaska time on July 13, 2015. On July 6, 2015 ADFG submitted comments to the Division. The Applicant responded to the comments and satisfactorily addressed ADFG's comments. See Appendix B.

Public Review:

The public notice process is discretionary and was not initiated for this application.

Notification:

In accordance with Alaska Administrative Code (AAC) 11 AAC 96.030(c), the Division provided notification to upland landowners that the Division received a Miscellaneous Land Use Application to conduct geophysical activities on tide and submerged lands adjacent to their properties.

The Division received phone calls from landowners asking about the seismic project and some of them requested a copy of the application. Division staff provided information over the phone to landowners.

Performance Guarantee:

The permittee has provided the Division with a performance guarantee under 11 AAC 96.060 in the amount of \$100,000.

Application Approved:

Should any unforeseen issues arise, the Division has authority to revoke or amend this permit. As detailed in this authorization, the Division shall be notified if, during the conduct of operations, a surface use conflict occurs. All operations conducted under this permit are subject to inspection by the Division, and if damage occurs, appropriate interest holders will be engaged, and corrective action will be prescribed. The Division will impose additional provisions as necessary under 11 AAC 96.040 at any time during the activity approved under this authorization to minimize impacts and conflicts.

The Division considered all facts material to this application including the permit provisions contained in this authorization per 11 AAC 96.040(b). The Division has determined that this permit and attached provisions for this non-permanent activity as conditioned is in the state's interest. Stipulations in this permit authorization are necessary to protect the state's interest and the public interest.

An eligible person affected by this decision may appeal it, in accordance with 11 AAC 02. Any appeal must be received within 20 calendar days after the date of issuance of this decision, as defined in 11 AAC 02.040 (c) and (d), and may be mailed or delivered to the Commissioner, Department of Natural Resources, 550 W. 7th Avenue, Suite 1400, Anchorage, Alaska 99501; faxed to 1-907-269-8918; or sent by electronic mail to dnr.appeals@alaska.gov. This decision takes effect immediately. An eligible person must first appeal this decision in accordance with 11 AAC 02 before appealing this decision to Superior Court. A copy of 11 AAC 02 may be obtained from any regional information office of the Department of Natural Resources.

Sincerely,


for:
Kim Kruse
Permitting Manager

Division of Oil and Gas

Appendices: A: Stipulations
 B: Comments
 C: Maps

ecc: DNR:DOG, Land Sales, DMLW, Parks, OPMP, USACE, ADEC, ADFG, ADOA, KPB,
 NOAA, BSEE, USCG

APPENDIX A: STIPULATIONS

MISCELLANEOUS LAND USE PERMIT FOR GEOPHYSICAL EXPLORATION

Geophysical and Seismic activities are subject to the following permit stipulations:

Standard Stipulations:

1. The permittee shall defend, indemnify and hold the State of Alaska harmless from and against any and all claims, damages, suits, losses, liabilities and expenses for injury to or death of persons and damage to or loss of property arising out of or in connection with the entry on and use of State lands authorized under this permit by the permittee, its contractors, subcontractors and their employees.
2. A copy of the permit and stipulations must be posted in a prominent location where other permits and safety information are displayed for crew members. The permittee shall make available a copy of the application, all subsequent modifications, and a copy of this permit and all its attachments to any interested party upon request and in a reasonable time.
3. The permittee shall notify and obtain a modification from the Division in advance of any activities which deviate from the approved permit. Any action taken by the permittee or his agent which increases the overall scope of the project or which negates, alters, or minimizes the implied intent of any stipulation contained in this permit will be considered a significant deviation from the approved permit.
4. The issuance of this authorization does not alleviate the necessity of the permittee to obtain authorization required by other agencies for this activity.
5. The permittee shall inform and ensure compliance with all conditions of this permit by its employees, agents and contractors, including subcontractors at any level.
6. Reservation of Rights: The Division reserves the right to grant additional authorizations to third parties for compatible uses on or adjacent to the land under this authorization. Authorized concurrent users of state land, their agents, employees, contractors, subcontractors, and licensees, shall not interfere with the operation or maintenance activities of each user.
7. Valid Existing Rights: This authorization is subject to all valid existing rights and to the land. The State of Alaska makes no representations or warranties whatsoever, either expressed or implied, as to the existence, number, or nature of such valid existing rights.
8. The Commissioner of the DNR may require that an authorized state representative be present during any oil and gas activities described in or conducted under this permit.
9. The permittee shall consult the Alaska Heritage resources Survey (907-269-8721) so that known historic, archeological and paleontological sites may be avoided. Should any sites be discovered during the course of field operations, activities that may damage the site will cease and the Office of History and Archaeology in the DPOR (907-269-8721) shall be notified immediately.

10. The permittee shall make available, to the Division, all records relating to the survey operations and landowner approvals upon request.
11. The permittee shall observe and apply applicable setbacks as defined by 18 AAC 80.020, 18 AAC 72 and/or the International Association of Geophysical Contractors Setback Guidelines to activities approved under this authorization. Alternative setback distances may be employed to protect coastal uses and resources, water wells, structures, private property including livestock, and other resources if it is determined that a particular guideline is insufficient.
12. The Director has the right at any time to modify or revoke this permit.
13. All wastewater must be disposed of in a manner acceptable to ADEC and must meet Alaska Water Quality Standards found at: <http://dec.alaska.gov/water/wqsar/wqs/>.
14. ADEC Drinking Water regulations 18 AAC 80 apply to public water systems.

Land and Access Stipulations:

1. The permit authorizes the Permittee to conduct geophysical/seismic exploration activity upon lands owned by the State of Alaska. No person may engage in mineral exploratory activity on land, the surface of which has been granted or leased by the State of Alaska, or on land for which the state has received the reserved interest of the United States.
2. This approval does not authorize activity on Mental Health Trust Lands, School Trust Lands, Park Lands, or Lands of the University of Alaska.
3. Approval of this permit does not constitute the approval required for surface entry on non-state land without an agreement with the surface owner. This permit does not approve entry on private land.

Public Safety and Program Outreach Stipulations:

1. Notices: To avoid unintended conflicts with other users, the permittee shall post a Notice of this project at conspicuous locations including key travel intersection crossings, areas of public use and in a prominent location in any operators or contractors staging area or camp. The Notice shall include the Division's contact number (907-269-8800), project title and permit number, names and contact telephone numbers of the permittee and all operators. The permittee shall provide notices on behalf of the Division to all upland owners involving shoreland, tideland, or submerged land adjacent to the upland owner's property if no notice or agreement is made with the owner by the permittee as required under 11 AAC 96.030(c). All forms of public outreach must be documented and reported to the Division as they occur.
2. In areas of subsistence and personal use harvesting, the permittee will coordinate survey activity with local users to prevent unnecessary conflicts. The permittee shall make a good faith attempt to coordinate survey activities with the owners of trap lines if known. Existing snowmachine, dogsled, or other trails, should be marked with survey lath where they intersect receiver and

source lines. The permittee is required to post notice of potentially dangerous or hazardous project activities at these locations.

Fuel and Hazardous Substances Stipulations:

1. Fuel and hazardous substances. Secondary containment shall be provided for fuel or hazardous substances, as defined under AS 46.03.826 (5) or under 42 U.S.C. 9601(14)F.
 - a. Fuel or hazardous substance transfers. Secondary containment or a surface liner must be placed under all container or vehicle fuel tank inlet and outlet points, hose connections, and hose ends during fuel or hazardous substance transfers. Appropriate spill response equipment to respond to a spill of up to five gallons must be on hand during any transfer or handling of fuel or hazardous substances. Transfer operations shall be attended by trained personnel at all times.
 - b. Fuel or hazardous substances container(s) with a total combined capacity larger than 55 gallons shall not be stored within 100 feet of a waterbody.
2. Sorbent material in sufficient quantity to handle operation spills must be on hand at all times for use in the event of an oil or fuel spill.
3. Any use of explosives or blasting materials must comply with ADFG Habitat Publication No. 13-03, Alaska Blasting Standard for the Proper Protection of Fish. Additionally the permittee must contact the nearest ADFG Division of Habitat office regarding the need for a Fish Habitat permit.

Wildlife Stipulations:

1. All activities shall be conducted in a manner to minimize or avoid disturbance to wildlife and their habitat. Hazing of wildlife is prohibited unless a Health Safety and Environment concern is present.
2. The permittee shall abide by the provisions of Alaska's wildlife feeding regulation, 5 AAC 92.230.
3. Operations within State-designated special areas (AS 16.20.010- .162, .500-.690) will be conducted in a manner consistent with the area's statutes regulations and management plan.

Cook Inlet Stipulations:

1. On-site refuse disposal is prohibited. The permittee will remove and dispose of all waste generated during operation and termination activities under this authorization to an off-site ADEC approved disposal facility. Waste, in this stipulation, means all discarded matter, including but not limited to human waste, trash, garbage, refuse, oil drums, petroleum products, ash and discarded equipment. Unattended vehicles and equipment will not be parked or left on the traveled surface of existing off- line trails or access routes.

Project Specific Stipulations:

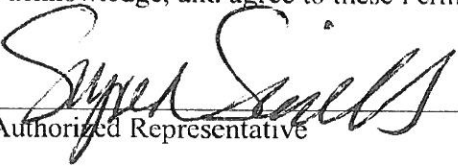
1. The permittee shall obtain a Special Area Permit if work is proposed within the Clam gulch Critical Habitat.
2. SAE will include ADFG on the sim-ops report for activities related to this permit.
3. SAE will include the Division, dog.permitting@alaska.gov, on the sim-ops report for activities related to this permit.

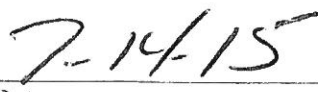
Reporting Stipulations:

1. Notifications: The permittee shall comply with the ADEC requirements for reporting the unauthorized discharge, leak, or spill of hydrocarbons or toxic or hazardous substances. The permittee shall notify the Department of Natural Resources of all spills that must be reported under 18 AAC 75.300 under timelines of 18 AAC 75.300. All fires and explosions must be reported to DNR immediately. The DNR 24 hour spill number is (907) 451-2678; the fax number is (907) 451-2751. DNR and ADEC shall be supplied with all follow-up incident reports.
2. Blowouts, as defined as the detonation of source points that caused surface damaged, are reportable if the surface damaged is larger than 36 inches. The report must include the location (Lat./Long. in WGS 84) and pictures of the blowout. All blowouts will need to be reclaimed or rehabilitated to the satisfaction of the Alaska DNR.
3. As a stipulation of the issuance of this MLUP for Geophysical Exploration, the permittee acknowledges the requirements of 11 AAC 96.210 (1) and agrees to notify the Director of the Division and submit seismic exploration data. The Geophysical Data Submission Requirements can be found on the DNR Division's Website <http://dog.dnr.alaska.gov/Permitting/PermittingForms.htm>.
Your signature acknowledges your obligation to fulfill the Data Submittal requirements.
4. The permittee must complete and return a Geophysical Activity Completion Report form for each set of 3D data acquired. Please submit a separate form for each sub-program data submittal. A non-confidential public completion report will be placed into the permit file each time a sub-program is completed. Completion reports must be submitted to our office by July 1 of the following year. For in depth instruction on how to complete the form please refer to the Division's permitting website <http://dog.dnr.alaska.gov/Permitting/PermittingForms.htm>.
5. A summary record of all surface impacts, lost equipment, spills, fires, and unintended explosions, shall be included in the completion report. Rehabilitation, if required, shall be completed to the satisfaction of the DNR.
6. The Division's Permitting Section shall be notified in Anchorage by telephone at 907-269-8800 and by email at dog.permitting@alaska.gov if, during the conduct of operations, state resources are damaged or a conflict occurs.

7. Annual Reports: if the term of the MLUP exceeds on calendar year from the date of approval, an annual report must be submitted discussing the project timeline, progress, project work and continued public outreach.
8. Completion Statement: Upon expiration of the MLUP or completing all operations authorized under the MLUP, whichever occurs first, a completion report must be submitted discussing a summary of the operations, equipment trails, camps and staging areas, damages to State lands, spills, land-use conflicts and work completed.

I acknowledge, and agree to these Permit terms, conditions and stipulations.


Authorized Representative


Date

Appendix B: Comments

Agency Review Comments

1. ADFG, Division of Habitat, July 6, 2015:

ADF&G, Habitat Division, reviewed the Plan of Operations for the SAExploration 3D Marine seismic survey in Lower Cook Inlet and contacted colleagues in the other Divisions of Fish and Game. ADF&G recommends that any seismic work in Cook Inlet avoid the salmon migration and fishery activities, approximately May through September, to avoid potential impacts or conflicts. Please contact Pat Shields at 907 260-2941 or pat.shields@alaska.gov for specific information regarding commercial fishing activities.

The Clam Gulch Critical Habitat Area (CGCHA) is located in or adjacent to the proposed project. If any portion of the 3D marine work is located within the Critical Habitat Area, a Special Area Permit will be required. The CGCHA was established by the Alaska legislature in 1976 through the enactment of AS 16.20.595. The critical habitat area includes all tide and submerged lands to the minus five foot elevation from Cape Kasilof to Happy Valley. The purpose of the CGCHA is to “...*protect and preserve habitat areas especially crucial to the perpetuation of fish and wildlife, and to restrict all other uses not compatible with that primary purpose.*” (AS 16.20.500) Critical habitat areas support essential life functions or large concentrations of one or more fish or wildlife populations. The following stipulations regarding seismic work will be incorporated in a Special Area Permit for any seismic activities within the CGCHA:

- There shall be no drilling/detonation in the clam beds, below the gravel line, within the CGCHA.
- Prior to blasting in the Transitional Zone, adequate mapping information and field confirmation shall be used to verify clam bed locations. Any drilling /detonation activities between Mean High Tide and the clam beds shall be mapped in detail depicting the mean high tide line, the gravel line, shot hole locations, and depth and charge amounts. This information shall be submitted to ADF&G and approved in advance of blasting activity.
- To protect clam eggs and free floating larvae, marine based seismic operations shall NOT occur from July 1 through October 15 within the boundaries of the CGCHA.

The following comments/concerns are from other ADF&G Divisions:

CLAMS

Razor clams beaches extend 1 mile plus for some of the east side beaches. Spawning occurs in July and August. Larvae drift from 6 weeks to 2 months or more as they metamorphose and

settle to the substrate as juveniles. As you are aware, eastside beaches from the Kenai River to the tip of the Homer Spit are closed to clamming due to low density of mature size razor clams and poor recruitment of juvenile clams to the beaches (see attached).

I am unsure what provisions should and/or can be made to ensure that razor clams are not impacted by this seismic survey. Do you know specifically how far the sound will travel and/or more information if the sound will travel into the CGCHA? There is concern that this activity can hinder razor clam recovery as there is evidence that exposure of noise during larval development can have adversely impact shellfish development based on the following report <http://www.nature.com/srep/2013/131003/srep02831/full/srep02831.html>.

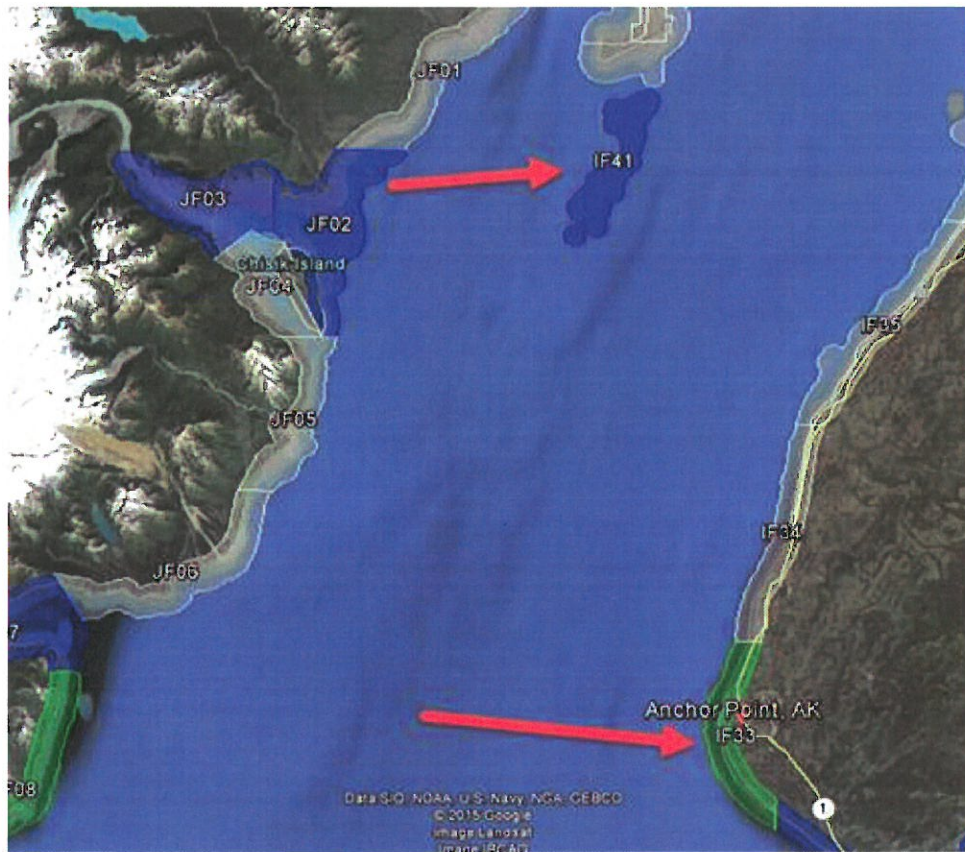
MARINE MAMMALS

Based on results from an acoustic study of beluga whales and anthropogenic sources of underwater noise in Cook Inlet (see Final CIBA, attached), the spatial and temporal prevalence of received levels of anthropogenic noise in Cook Inlet have the potential to mask beluga communication and hearing in some locations and periods studied. As such, the potential reduction in beluga communication and echolocation range is considerable. These results need to be considered, especially in regards to the cumulative impacts of noise from seismic operations combined with anthropogenic noise measured from the acoustic study.

The applicant has Incidental Harassment Authorizations for beluga whales and sea otters and is providing vessel-based visual monitoring for marine mammals. However, there are sizeable harbor seal haulout sites within the project area and mitigation steps to minimize disturbances are not addressed in the Plan of Operations. Harbor seals are protected under the Marine Mammal Protection Act (MMPA) and a special Take permit may be required for this project as any disturbance is a violation of the MMPA. Questions about the MMPA and authorized activities should be directed to NOAA Fisheries Alaska Region Protected Resources Division at 907-586-7235 or NOAA Fisheries Small Take Program at 301-713-2322.

Haulout site IF41 is identified as important by NMFS for harbor seal survival, with high count numbers and pupping activity; IF41 is a sandbar immediately south of Kalgin Island (see map below). This haulout consistently had high counts regardless of season during low tides (with August being an especially high month count) (Boveng et al. 2011, London pers. comm.). Counts in survey unit IF41 (years 2003-2010) ranged from 0-750 seals. Another smaller haulout, IF33, is located on the east shore of Cook Inlet near Anchor Point (see map below). Average seal numbers in survey unit IF33 (years 1997-2011) were 50 to 150 animals. Count data courtesy of the NMML, surveys were conducted in August, variability occurs throughout the year. Please contact Josh London (Josh.london@noaa.gov) or Dave Withrow (Dave.Withrow@noaa.gov) for questions about these data or use-permissions.

Activities in these areas that have the potential to disturb harbor seals should be avoided or minimized, especially in the critical seasons during pupping (May/June (peak) and molting activities (May – September (peaking in August)). Disturbance during the pupping season can cause pup fatality due to permanent separation of mother and pup and haulouts experiencing a high level of disturbance may become abandoned (Hoover-Miller, 1994). Vessel operators should give haulout areas a wide berth as scientific evidence (Jansen et al. 2010) indicates harbor seal disturbance may occur at distances up to 500 m. The National Marine Fisheries Service recognizes that the current guideline of maintaining a distance of 100 yards may be inadequate and is considering possible revisions.



FISHERIES

SAExploration (SAE) plans to acquire a 3D seismic survey in Upper Cook Inlet (UCI) throughout the summer of 2015-2016. In SAE's Plan of Operations document, they identify the survey area where they will conduct their seismic work. As it pertains to commercial fishing, it looks like all of the work in the summer of 2015 will fall within the Central District of UCI (Figure 1).

In the Central District of UCI, both set and drift gillnets are fished commercially from the beginning of June through about mid-September. In the area identified in Figure 1, there will be considerable potential for conflict with commercial fishing activities. In July it is not uncommon

for commercial fishing to be open in this area for up to 25 days. North of the Ninilchik River set gillnetting is open from the beach out to 1.5 miles from shore. Drifting is allowed from the shore throughout the range of waters identified in Figure 1.

There are two concerns for potential interaction with commercial fishing activities. First, is the entanglement of SAE seismic hardware with commercial fishing nets. Setnetters employ a tremendous amount of buoys and lines to set, fish, and retrieve their gear. They typically fish three 35-fathom long nets per permit. Fishing nets are known to be notoriously “sticky,” meaning that obstacles they encounter are easily entangled with the gear. The second concern has been identified in an earlier response to SAE’s proposed activities, and it involves the potential changes to the behavior of migrating salmon as a result of the energy expelled into the water by their SAE’s seismic devices. The following paragraph comes from an earlier response to SAE planned activities in the Northern District of UCI.

ADF&G has concerns with SAE’s proposed seismic work on salmon migration. In a joint study with the United States Geological Survey (USGS), the Alaska Department of Fish and Game recently evaluated the efficacy of using water guns to kill invasive northern pike (Jackson et al. 2013). The larger of the two water guns used for this study was a Bolt Model 1900 prototype with a 5,620.8 cm³ (343 in³) chamber. This water gun was able to kill or cause significant internal organ damage to caged fish up to 6m away from the treatment blasts. SAE states that they will be using 1,760 in³ air guns in their exploration work. It is unclear what kind of impact these air guns could have on resident or migrating fish that come into contact with the energy emitted from these guns. Both adult and juvenile salmon are known to migrate through the marine waters of UCI from May through September. In a study on the marine residence, growth, and feeding by juvenile salmon in Northern Cook Inlet, Alaska, Moulton (1997) reported that hydroacoustic sampling indicated that most juvenile salmon were within the top 2m of the water column. Has SAE been able to show that fish that come into contact with the energy emitted from their air guns will not be harmed? What are the impacts on other marine life?

Applicant’s Response:

SAEXploration I would like to address the Alaska Department of Fish & Game (ADF&G) concerns noting four potential concerns with SAE’s seismic program in Lower Cook Inlet:

1. Clam Gulch Critical Habitat(CGCH)
2. Noise disturbance of marine mammals.
3. Pacific salmon.
4. Potential interference with commercial, sport, and subsistence fisheries.

CGCH Restrictions

SAE has been in contact with the AKFG during our permit application process. As discussed with AKFG; SAE’s plan of operations do not include land based charges. At this time SAE is

not submitting a special area permit to work with in the CGCH area. Later in the fall if SAE needs to include this area, we will contact F&G via permit application.

Noise Disturbance of Wildlife

Marine mammals and issuance of IHA's are under the authority of NOAA. Although Special Take Permits are not required for operations as suggested below, SAE has received an authorization from NOAA. The noise concerns are address by NOAA and NMFS in detail through the MMPA and the ESA process which in turn produces the IHA that SAEExploration currently holds. SAE's seismic noise levels are within the range considered safe for bony fish(Salmon), SAE in its MMMP has not witnessed any fish mortalities as a result of air gun operations in the many years of operations. The study sited below, is not using the same type of airgun and appears to be an air cannon. The study also used a source level more than double the size of SAE's sound source. The study used no type of mitigation but purpose was for destroying the invasive species of fish. We do not feel that these type of study can be used as comparisons to seismic source operations with maximum mitigation measures.

SAE is well aware of the potential impact the planned seismic operation could have on local populations of all marine mammals. As a result of a many years of experience working in the Cook Inlet, SAE has in the past and will be for this project, implementing the mitigation measures that are listed in our marine mammal monitoring plan that is approved by NMFS.

Relative to beluga whales (and any other species listed under ESA), the shutdown safety zone begins at the 160 dB isopleth, not the 180 or 190 dB isopleth as with unlisted marine mammals. This is not a Marine Mammal Protection Act (MMPA) requirement, but a requirement expected as a result of ESA consultation. SAE implemented these same measures during seismic surveys conducted in 2012, with the result that no beluga whale were exposed to noise levels exceeding 160 dB. The requested authorization for the takes of belugas in the IHA application was requested as "insurance" against the possibility of a group of beluga getting within an exclusion zone before detection and implementation of a shutdown could occur.

SAE has funded numerous sound source verifications (SSVs) of the airgun equipment used in both Cook Inlet and Arctic waters. Multiple SSVs were conducted on SAE's various airgun arrays in both 2011, 2012 and 2014 in the Cook Inlet. In establishing safety and harassment monitoring zones, SAE selected the most conservative measurements (90th percentile, deep water) relative to the SSVs that have been conducted in Cook Inlet to date given the sizes of the proposed airgun arrays. The proposed shutdown exclusion zone for beluga whales already has a radius of nearly 7 kilometers, and SAE will be purposely operating outside waters where beluga whales are expected to summer. With such a large shutdown zone, we strongly believe that communication masking issues with belugas will be eliminated, this fact is reinforced by our real time passive acoustic monitoring.

As an obligation in the project's updated Marine Mammal Monitoring and Mitigation Plan (4MP), any marine mammal injury take by SAE's seismic program will be immediately reported to the NMFS Office of Protected Species, the NMFS Regional Office-Anchorage, and the Alaska Regional Stranding Coordinators. Any noted injury to waterfowl or fish resources from the proposed seismic program will be reported to the ADF&G Division of Habitat.

Interference with Fisheries

SAE in the past has worked so well with the fishing industry that in the past, SAE received the award for Outstanding Oil Industry Business at Industry Appreciation Day. We were nominated by UCIDA, who we worked with very closely during our marine operations. Last year SAE worked successfully in and around the fishing industry in the Cook Inlet. SAE has developed a Plan of Cooperation that includes communicating directly with native subsistence interests, sport fishing groups, and commercial fishing associations as relevant to the actual project location. SAE has included the ADF&G Division of Habitat in the sim-ops report that is sent out to all interested parties. The exact location of where the lower Cook Inlet, 2015 seismic survey will occur has not yet been finalized, once this happens we will work with the fishing industry to avoid conflicts.

Division Response:

Comment forwarded to applicant for a response. SAExploration responded to ADFG's comments and on July 6, 2015 ADFG stated: "SAExploration addressed our questions and we look forward to working closely with them as the project moves forward."

Additionally, project specific stipulations were added as a result of ADFG's comments.

Appendix C: Map

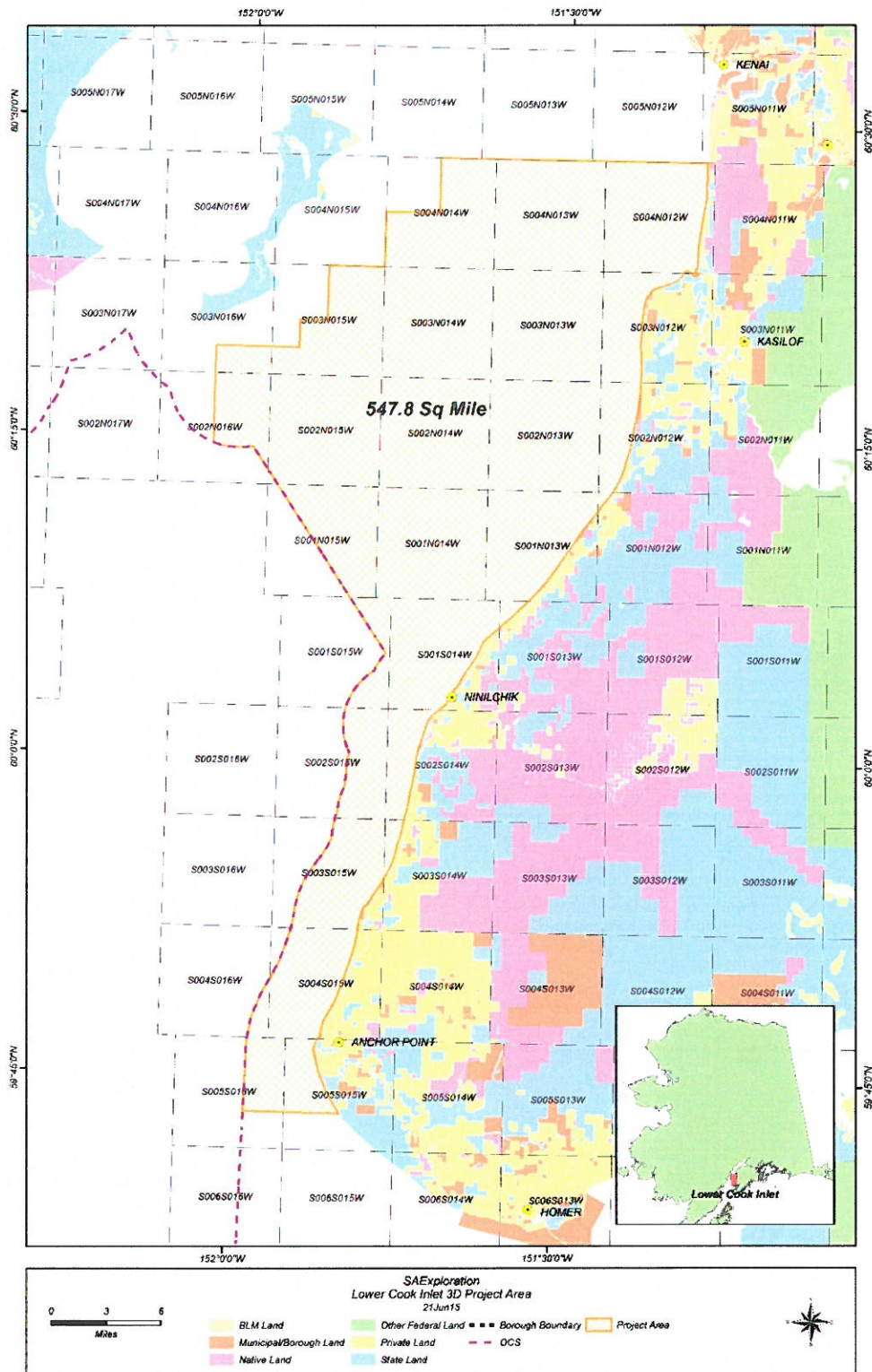


Figure 1: Project Area